

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

## VIRGINIA SECTION.

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VOL. XXVII. RICHMOND, VA., YEAR 1917.

No. 13.

## GENERAL SUMMARY.

The year 1917 was the coldest since State-wide records began in 1892. The mean temperature was  $53.3^{\circ}$ , which is  $2.2^{\circ}$  below normal. May, September, October, and December established new low record means for the respective months. The greatest deficiency for any month was  $9.3^{\circ}$  in December. Only two months had mean temperatures above normal, namely, January and April, the excesses amounting to  $2.3^{\circ}$  and  $1.0^{\circ}$ , respectively. The highest temperature reported during the year was  $103^{\circ}$  at Diamond Springs on August 1; the lowest,  $27^{\circ}$  below zero, occurred at Blacksburg and Burkes Garden on December 30. The latter temperature is within  $2^{\circ}$  of the absolute low record for Virginia. The highest monthly mean,  $79.4^{\circ}$ , was that for July, at Mount Moriah Farm. The lowest was  $20.6^{\circ}$  for December, at Kindrick.

Precipitation averaged 40.82 inches for the State, or 3.13 inches below the annual normal. March, July, and October showed excesses, the greatest being 2.55 inches for March. The other months were dry and the total fall for November, 0.58 inch, was 1.85 inches below normal and the lightest of record for that month. The greatest annual precipitation recorded was 55.72 inches at Runnymede. The least was 25.62 inches at Ivanhoe. At Diamond Springs 13.57 inches fell during July, while for the other extreme, the total for November at Randolph was but 0.10 inch. The greatest amount for 24 consecutive hours was 3.85 inches at Diamond Springs on July 24. The average snowfall for the year was 23.7 inches, 14.0 inches of which occurred during December. The record snowfall for December was previously 8.4 inches.

## THE WEATHER BY MONTHS.

**JANUARY.**—Moderate temperatures prevailed, except during a single cold period from the 11th to the 17th, the 12th being the coldest day of the month. While the average snowfall was unusually light and precipitation, in general, a little below normal, there were more than the average number of cloudy days and days with 0.01 inch or more of precipitation; and near the coast, where this condition was aggravated by the frequent occurrence of dense fog, sunshine was notably deficient. A general sleet storm visited the State on the 15th, resulting in minor damage in localities where the fall was heavy, and sleet storms of a more local character occurred on several other dates.

**FEBRUARY.**—The frequent occurrence of fogs in the vicinity of the coast, and a deficiency in the amount of sunshine, now more pronounced in the western portion of the State, continued during February. Precipitation was uniformly below normal in all except a few southwestern counties, where moderate excesses were recorded, and the average for the State was deficient by nearly an inch. The greater part of the precipitation occurred during the last two weeks. Snowfall was moderate and no severe storms were reported. During the

first half of the month temperatures were unusually low, especially on the 3d, 5th, 6th, and 13th. During the last half decidedly warmer weather prevailed, and on the 26th and 27th previous high temperature records for February were broken at a number of stations. The mean temperature for the month was nearly normal.

**MARCH.**—Falling temperature, which came with the beginning of March, lasted until the 7th, after which seasonable temperatures prevailed, with moderate excesses on the 11th and 12th and deficiencies on the 18th and 19th. The highest readings of the month were recorded on the 31st. The most notable feature of the weather during March was the period of general and unusually heavy precipitation that extended from the 1st to the 5th, inclusive. As ample precipitation occurred during the remainder of the month also, the totals at practically all stations were decidedly above normal, and the average number of rainy days was the highest of record for March.

**APRIL.**—April averaged a little warm for the season, but no unusual extremes of temperature were recorded during the month. However, periods of moderately cold weather occurred from the 4th to the 15th, inclusive, and after the 25th; and from the 17th to the 25th, inclusive, temperatures were sufficiently high for the frequent occurrence of thunder-storms. Precipitation was rather light, and the amount of sunshine a little above normal, and farming operations, which had been materially delayed by the excessive rainfall of March, progressed rapidly.

**MAY.**—This, the last of the spring months, brought a return to almost wintry weather. The unusually low temperature of the first two weeks was accompanied by occasional light frosts, and frequent cold rains occurred during the first ten days. The second decade was without precipitation. The temperature moderated somewhat about the middle of the month and the rains that fell after the 21st were associated with thunder-storms. Precipitation averaged below normal, while wind velocities were above the average. Farmers were able to make fair progress with spring work, but for the germination of seeds and the growth of crops, the weather was decidedly unfavorable, especially during the first half of the month.

**JUNE.**—June was more nearly a normal month, as regards temperature, though it was still a little cold in the western portion of the State. There was also a marked difference between east and west with respect to precipitation, which averaged about one and one-half inches above normal in Tidewater Virginia and nearly two and one-half inches below in the Great Valley Division. Precipitation was well distributed throughout the month, which, with the seasonable temperatures and rather more than the normal amount of sunshine, made excellent growing weather, and crops improved steadily.

**JULY.**—July was the first month since March with more than the normal amount of precipitation and was, with the exception of March, the wettest month of the year. Thunder-storms occurred almost daily from the 7th to the 27th and on one or two of the first seven days. The month averaged cool, but toward the end there was a sharp rise in temperature, and the 30th and 31st, together with the first two days of August, formed the only distressing heat wave of the summer. In spite of a general deficiency in the amount of sunshine, crops continued to make satisfactory growth, but cultivation was interrupted, especially in the southeastern portion of the State, by the frequent showers, and weeds and grass threatened to take the fields, when the fair weather of the last four days brought relief.

**AUGUST.**—After the 2d the temperature was moderate for August, and it averaged a little below normal for the month, as a whole. An unusually large number of clear days resulted in a high percentage of sunshine. Light winds prevailed, and

the precipitation, though considerably below the average in amount, was distributed through the month with remarkable regularity, occurring in five periods of showery weather separated by intervals of about a week. The showers were local in character, however, and in some communities they were too light or too infrequent for the needs of growing crops, but in general the month was one of excellent summer weather.

**SEPTEMBER.**—This month was remarkable for the almost continuous cold weather that prevailed from beginning to end, producing an average temperature the lowest of record for September. Light frosts had occurred generally in northern and western counties before the middle of the month, and killing frost was reported from Burkes Garden, Tazewell County, on the 12th and 13th. There was much cloudy weather, and consequently a deficiency in the amount of sunshine. Rainfall was lighter than usual, except in the southeastern portion, where heavy rains occurred from the 14th to the 16th, inclusive, while Middle Virginia counties were getting only moderate rains, and extreme northern and western counties little or none. Damaging hail-storms visited Albemarle, Goochland, and Hanover, and portions of Fluvanna and Buckingham Counties on the 6th.

**OCTOBER.**—The cold weather continued throughout October, with only a few brief and unimportant interruptions, again establishing a new low record for average temperature for the month. During the first week killing frosts occurred generally in western border counties, by the middle of the month they had extended over all of Middle and a part of Tidewater Virginia, and by the end of the month over all remaining counties, except in the extreme southeast. This was the third month of the year to show an average excess of precipitation, but in this instance the departure was slight. The average depth of snowfall was, however, the greatest of record for October, the fall being more or less general in northern and western districts on the 24th. A tornado visited northern Pittsylvania County on the night of the 29th. In the town of Gretna, which lay in the path of the storm, one person was killed, several were injured, and property worth \$50,000, or more, was destroyed.

**NOVEMBER.**—This, too, was a cold month, especially the first and last weeks, when temperatures were continuously below normal. With respect to precipitation, it was a record breaker for November, the average for the month being less than one-fourth the normal amount. No precipitation occurred prior to the 20th at most stations, and only inconsiderable amounts prior to the 28th. There was a falling off in the amount of snowfall, as compared with October. The drought interfered with the germination of late sown grain, but farm work progressed satisfactorily.

**DECEMBER.**—As a fitting conclusion to a cold year, December produced a mean temperature decidedly below that of any previous December of record, and the same is true of the absolute low temperature of the month, 27° below zero. This is within 2° of the lowest temperature known to have occurred in Virginia, which was recorded in February, 1899. The snowfall was by far the heaviest known for December, and covered the ground during the latter half of the month, thereby protecting winter grains from the most severe weather, which occurred about the middle and end of the month. In spite of the unusually heavy snowfall, this was the driest December since 1896. There was much cloudy weather, and a deficiency in the amount of sunshine resulted.—*H. C. M.*

**ERRATA.**

July, page 52, Clarksville, departure from the normal precipitation should be +4.83. August, page 60, Ivor, departure from the normal precipitation should be -2.68; Hot Springs, departure from the normal precipitation should be -0.65. September, page 68, Wytheville, departure from the normal temperature should be -1.9. November, page 84, Doswell, monthly mean temperature should be 41.8; page 86, Dos-

well, mean maximum temperature should be 56.3. December, page 94, Dale Enterprise, maximum temperature on the 7th should be 39; mean maximum temperature should be 32.8.

**CLIMATOLOGICAL DATA, 1917.**

Month.	Temperature.			Precipitation.			Number of days.			
	Mean.	Highest.	Lowest.	Average.	Greatest 24-hour rain.	Average snow-fall.	Rainy.	Clear.	Partly cloudy.	Cloudy.
January	38.2	72	-7	3.05	1.92	2.1	11	11	8	12
February	35.9	79	-11	2.32	1.30	2.6	8	12	8	8
March	44.9	84	5	6.30	2.11	2.0	14	13	7	11
April	55.1	94	21	2.97	2.33	0.8	8	14	9	7
May	59.1	98	30	3.01	2.00	1.1	8	13	10	8
June	70.8	99	28	4.11	3.03	0.0	11	12	13	5
July	74.9	102	39	6.10	3.85	0.0	14	10	12	9
August	78.4	103	35	2.90	2.80	0.0	8	17	9	5
September	64.1	95	27	3.12	3.07	0.0	8	12	8	10
October	51.9	88	15	3.90	2.67	0.5	8	18	7	6
November	43.3	78	-11	0.58	0.95	0.3	4	15	5	9
December	28.0	64	-27	1.76	1.30	14.0	6	11	7	13

**COMPARATIVE ANNUAL DATA.**

Year.	Mean temperature.	Highest.	Lowest.	Average precipitation.	Average snow-fall.	No. of rainy days.	No. of clear days.	No. of partly cloudy days.	No. of cloudy days.
1892	54.8	106	-8	40.01	.....	95	163	101	102
1893	55.1	104	-26	46.83	23.1	103	156	100	109
1894	57.0	105	-11	35.97	17.0	88	166	104	95
1895	54.6	107	-18	38.09	38.8	94	174	103	88
1896	56.4	105	-10	42.89	12.3	93	163	106	97
1897	56.0	103	-15	40.81	11.8	92	171	99	95
1898	56.5	105	-9	44.80	8.7	108	162	101	102
1899	56.4	106	-29	43.18	36.7	98	176	95	94
1900	57.0	107	-8	39.33	18.6	86	181	91	93
1901	55.3	106	-14	50.17	9.5	100	167	94	104
1902	55.6	108	0	51.42	14.9	95	170	97	98
1903	55.1	105	-13	44.85	8.4	95	172	89	104
1904	53.8	100	-14	36.18	24.9	96	170	101	95
1905	54.8	98	-15	43.58	18.5	111	155	112	98
1906	56.3	102	-2	49.56	15.2	124	143	120	102
1907	54.3	97	-16	44.19	17.4	115	159	115	91
1908	55.4	102	-20	45.21	30.0	110	162	108	96
1909	55.5	102	-5	39.81	12.9	101	171	104	90
1910	54.7	102	-9	41.37	20.3	112	151	116	98
1911	56.8	104	0	41.50	9.2	115	149	110	106
1912	54.5	100	-25	39.19	24.6	103	165	106	95
1913	57.2	102	-3	42.75	4.0	100	178	98	89
1914	55.0	103	-17	37.17	39.8	101	168	100	97
1915	55.8	101	-5	39.12	13.5	97	160	116	89
1916	55.5	102	-11	39.36	18.6	103	165	106	95
1917	53.3	103	-27	40.82	23.7	114	158	107	100

**KILLING FROSTS, 1917.**

Stations.	Last in spring.	First in autumn.	Stations.	Last in spring.	First in autumn.
<b>TIDEWATER VIRGINIA.</b>			<b>MIDDLE VIRGINIA-COD.</b>		
Ashland	Apr. 15	Oct. 13	Lynchburg	Apr. 14	Oct. 10
Cape Henry	Mar. 10	Nov. 6	Mineral	Apr. 15	Oct. 13
Diamond Springs	Apr. 15	Nov. 6	Mount Weather	Apr. 15	Oct. 12
Doswell	Apr. 16	Oct. 7	New Canton	Apr. 14	Oct. 13
Hopewell	Mar. 19	Oct. 31	Quantico	Apr. 15	.....
Ivor	Apr. 15	.....	Randolph	Apr. 14	.....
Mount Moriah Farm	Apr. 15	.....	Rocky Mount	May 12	Oct. 10
Newport News	Apr. 10	Oct. 31	Swansonville	.....	Nov. 1
Norfolk	Apr. 10	Nov. 25	Washington, D. C.	Apr. 14	Oct. 13
Richmond	Apr. 14	Oct. 31	<b>THE GREAT VALLEY.</b>		
Runnymede	Apr. 15	Oct. 13	Blacksburg	Apr. 15	Oct. 6
Wachapreague	Mar. 20	Nov. 1	Buchanan	.....	Oct. 15
Warsaw	Apr. 14	.....	Burkes Garden	Apr. 23	Sept. 13
West Point	Apr. 4	Oct. 13	Catawaba Sanatorium	Apr. 15	Oct. 10
Williamsburg	Apr. 15	Oct. 31	Dale Enterprise	Apr. 16	Oct. 7
<b>MIDDLE VIRGINIA.</b>			Dante	.....	Oct. 7
Arcola	Apr. 4	Oct. 7	Edgewater	Apr. 16	.....
Callaville	Apr. 15	Oct. 13	Elk Knob	Apr. 14	Oct. 13
Charlottesville	Apr. 14	Oct. 21	Hot Springs	Apr. 16	Oct. 7
Clarksville	.....	Oct. 22	Kindrick	.....	Oct. 7
Columbia	Apr. 15	Oct. 7	Lexington	May 11	Oct. 7
Culpeper	.....	Oct. 7	Mendota	.....	Oct. 13
Danville	Apr. 11	Oct. 13	North Holston	Apr. 14	Oct. 2
Fredricksburg	Apr. 14	Oct. 13	Roanoke	Apr. 15	Oct. 21
Gordonsville	Apr. 15	Oct. 13	Staunton	Apr. 15	Oct. 7
Lassiter	Apr. 11	Oct. 13	Winchester	Apr. 15	Oct. 7
Leeds Manor	Apr. 15	Oct. 13	Woodstock	Apr. 14	Oct. 10
Lincoln	Apr. 14	Oct. 7	Wytheville	Apr. 15	Oct. 2